

In the Claims

1           1. (currently amended) A monolithic microwave integrated circuit, comprising:  
2                   an amplifier circuit having a group delay variation verses frequency characteristic;  
3   and  
4                   a group delay equalizer circuit integrated with said amplifier circuit to  
5   compensate for said group delay variation verses frequency characteristic of said amplifier  
6   circuit to frequencies above 50 GHz.

1           2. (original) The circuit of Claim 1, wherein said amplifier circuit is capable of receiving  
2   an input signal having a frequency range, amplifying said input signal and producing an output  
3   signal corresponding to said amplified input signal, said group delay equalizer circuit being  
4   further capable of maintaining near constant group delay of frequencies within said frequency  
5   range of said input signal to prevent distortion of said output signal.

1           3. (original) The circuit of Claim 1, wherein said group delay equalizer circuit  
2   comprises between 3 and 20 percent of the area of said monolithic microwave integrated circuit.

1           4. (canceled)

1           5. (original) The circuit of Claim 1, wherein said amplifier circuit is a distributed  
2   amplifier circuit.

1           6. (original) The circuit of Claim 5, wherein said distributed amplifier circuit comprises  
2 one or more stages, each of said one or more stages including a common source field-effect  
3 transistor, a bipolar transistor or a cascode field-effect transistor structure.

1           7. (original) The circuit of Claim 1, wherein said amplifier circuit is a feedback  
2 amplifier circuit.

1           8. (original) The circuit of Claim 1, wherein said group delay equalizer circuit  
2 comprises one or more sections, each of said sections having a different group delay response.

1           9. (original) The circuit of Claim 8, wherein at least one of said one or more sections is  
2 placed at the input of said amplifier circuit.

1           10. (original) The circuit of Claim 8, wherein at least one of said one or more sections is  
2 placed at the output of said amplifier circuit.

1           11. (original) The circuit of Claim 8, wherein at least one of said one or more sections is  
2 placed between one or more stages of said amplifier circuit.

1           12. (original) The circuit of Claim 8, wherein said one or more sections are cascaded  
2 together to form a composite group delay response capable of compensating for said group delay  
3 variation verses frequency characteristic of said amplifier circuit.

1           13. (original) The circuit of Claim 8, wherein at least one of said one or more sections  
2   has least one microstrip line inductive over a specific frequency range and at least one capacitor  
3   to create a specific phase response over at least a portion of the frequency range of said amplifier  
4   circuit.

1           14. (original) The circuit of Claim 13, wherein at least one of said one or more sections  
2   is a filter selected from the group consisting of: an LC filter, a bridged LC filter, an RC filter and  
3   an RLC filter.

1           15. (original) The circuit of Claim 13, wherein at least one of said one or more sections  
2   is a filter with a microstrip transformer.

1           16. (original) The circuit of Claim 1, further comprising:  
2                   a substrate, said amplifier circuit and said group delay equalizer circuit being  
3   fabricated in said substrate.

1           17. (original) The circuit of Claim 16, wherein said substrate is made from a material  
2   selected from the group consisting of: a III-V material, a II-VI material and a heterostructure  
3   material.

1           18. (original) The circuit of Claim 1, wherein said group delay equalizer circuit is  
2   further capable of allowing a near constant gain response to be achieved over the frequency  
3   range of said amplifier circuit.

1           19. (currently amended) A method for providing a near constant group delay over a  
2 frequency range of a amplifier circuit, comprising the steps of:

3                   providing said amplifier circuit within a monolithic microwave integrated circuit,  
4 said amplifier circuit having a group delay response variation verses frequency characteristic;  
5 and

6                   integrating a group delay equalizer circuit with said amplifier circuit on said  
7 monolithic microwave integrated circuit to compensate for said group delay variation verses  
8 frequency characteristic of said amplifier circuit to frequencies above 50 GHz.

1           20. (original) The method of Claim 19, further comprising the steps of:

2                   receiving an input signal having a frequency range at said amplifier circuit;

3                   amplifying said input signal to produce an output signal corresponding to said  
4 amplified input signal; and

5                   maintaining, by said group delay equalizer circuit, near constant group delay of  
6 frequencies within said frequency range of said input signal to prevent distortion of said output  
7 signal.

1           21. (original) The method of Claim 19, wherein said group delay equalizer circuit  
2 comprises between 3 and 20 percent of the area of said monolithic microwave integrated circuit.

1           22. (canceled)

1           23. (original) The method of Claim 19, wherein said step of integrating further  
2 comprises the step of:

3                   integrating one or more sections of said group delay equalizer circuit with said  
4 amplifier circuit on said monolithic microwave integrated circuit, each of said sections having a  
5 different group delay response.

1           24. (original) The method of Claim 23, wherein said step of integrating said one or more  
2 sections further comprises the step of:

3                   placing at least one of said one or more sections at the input of said amplifier  
4 circuit.

1           25. (original) The method of Claim 23, wherein said step of integrating said one or more  
2 sections further comprises the step of:

3                   placing at least one of said one or more sections at the output of said amplifier  
4 circuit.

1           26. (original) The method of Claim 23, wherein said step of integrating said one or more  
2 sections further comprises the step of:

3                   placing at least one of said one or more sections between one or more stages of  
4 said amplifier circuit.

1           27. (original) The method of Claim 23, wherein said step of integrating said one or more  
2 sections further comprises the step of:

3 cascading said one or more sections together to form a composite group delay  
4 response capable of compensating for said group delay variation verses frequency characteristic  
5 of said amplifier circuit.

1 28. (original) The method of Claim 19, wherein said step of integrating further  
2 comprises the step of:

3 integrating said group delay equalizer circuit with said amplifier circuit on said  
4 monolithic microwave integrated circuit to allow a near constant gain response to be achieved  
5 over the frequency range of said amplifier circuit.

1 29. (new) A monolithic microwave integrated circuit, comprising:

2 an amplifier circuit having a group delay variation verses frequency characteristic;  
3 and

4 a group delay equalizer circuit integrated with said amplifier circuit to  
5 compensate for said group delay variation verses frequency characteristic of said amplifier  
6 circuit, said group delay equalizer circuit comprising a plurality sections, each section having a  
7 different group delay response, said plurality of sections being cascaded to form an overall  
8 composite group delay response.

1 30. (new) The monolithic microwave integrated circuit of claim 29, wherein said  
2 amplifier circuit has a plurality of stages.

1           31. (new) The monolithic microwave integrated circuit of claim 30, wherein said  
2 plurality of sections can be separated by said plurality of stages.

1           32. (new) The monolithic microwave integrated circuit of claim 29, wherein said  
2 group delay equalizer circuit is capable of compensating for said group delay variation verses  
3 frequency characteristic of said amplifier circuit to frequencies above 50 GHz.